Epi Notes

North Carolina Department of Health and Human Services ◆ Division of Public Health

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In This Issue:

Post-Exposure Rabies Treatment After Two Fox Bites

An Unusual Treatment Regimen

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On July 8, 2001 an Orange County man was bitten on the left leg several times by a fox. The fox had been chasing his daughter in the backyard when he went to intervene. The fox escaped; the man's rabies treatment was started that evening.

In accordance with recommendations made by the Advisory Committee on Immunization Practices (ACIP), post-exposure rabies treatment was initiated. The first day's treatment consisted of one dose of rabies vaccine (1 mL dose, intramuscular injection in the deltoid muscle) plus rabies immune globulin (RIG) (20 IU/kg, infused around the wound).

Approximately 11 hours after the initial attack, the man saw what he believed to be the same fox in his backyard and attempted to capture it. In the process, he was bitten several times on the right leg. The fox was killed and subsequently tested positive for rabies at the State Laboratory of Public Health. It is not known if it was the same fox that had bitten him earlier.

> **At issue in this case was how to proceed with post-exposure treatment given that a second exposure occurred while treatment for the first exposure was in progress. Should RIG be given a second time? If so, in what dosage and what locations? Should rabies vaccine be administered again? If so, what should be the new schedule?**

Treatment of the first wound was given in accordance with ACIP recommendations: RIG, at a dose of 20 IU/kg body weight, was infused around the site of the exposure (as much as was allowed by the anatomic location of the bites), with the remainder given in the gluteal muscles. A note is made in the

(continued on page 2)

recommendations of the ACIP that *because RIG can partially suppress active production of antibody, no more than the recommended dose should be administered.*

Both the Centers for Disease Control and Prevention, Division of Viral and Rickettsial Diseases Branch, and Aventis-Pasteur, manufacturer of rabies biologicals, were consulted for further guidance in this case. Both were in agreement that use of rabies vaccine should continue as scheduled. Both were in agreement that use of additional RIG was warranted for the second set of bites.

The recommendation was made to administer RIG around the site of the second set of bites in the patient, administering as much as anatomically possible up to 20 IU/kg body weight. Any RIG left after administration around the site of the second set of bites was to be discarded rather than injected into the gluteal muscles.

NOTES

This case was unusual in that a patient currently undergoing post-exposure rabies prophylaxis was again bitten by a rabid/suspect rabid animal. A situation was constructed in which the value of administering additional RIG around a new exposure site to inhibit reproduction of rabies virus must be weighed against the possibility that the additional RIG could prevent the active production of antibodies against rabies in the patient.

It was decided that interfering with viral multiplication around the site of the second set of bites was of primary importance.

This situation also serves as notice that, despite rabies becoming enzootic in the wild animal population in North Carolina, it remains a human health risk. People exposed to rabid or suspected rabid animals should be instructed to consult their physician or local health department for evaluation.

The Environmental Epidemiology Branch provides assistance to physicians, hospitals and local health departments in the evaluation of animal bites for rabies exposure.

During office hours: (919) 733-3410
After hours/weekends/holidays: (919) 733-3419

Printed and electronic media are available free of charge through request by telephone (919-733-3410), fax (919-733-9555), or Internet (www.schs.state.nc.us/epi/rabies). n

[i] Centers for Disease Control and Prevention. Human rabies prevention – United States, 1999: recommendations of the Advisory Committee on Inmmunization Practices (ACIP). MMWR 1999;48(No. 44-1).

West Nile Virus

Prepared by Paul Webb, Industrial Hygenist
Harmful Algal Blooms Program
Occupational & Environmental Epidemiology Branch

Mosquitos love to call North Carolina home. With recent rains and standing water, this summer is expected to hatch another batch of hungry bugs. The West Nile Virus (WNV) Core Team was formed this past spring to address the potential public health threat from WNV activity, as well as other mosquito-borne infections. Chaired by Dr. Steve Cline, this team is composed of experts from the Department of Environemtn and Natural Resources (DENR) Public Health Pest Management Section, Epidemiology Section, Public Health Laboratory, Department of Agriculture and Consumer Services, DENR and DHHS Public Affairs, the Department of Public Safety and Crime Control, and from local health departments. The task force also draws on the expertise from the University of North Carolina and North Carolina State University.

The WNV Core Team is in the final stages of recommending a public health response plan and procedures that have the following goals:

- Detection and monitoring
- Education and outreach to the public and health care community
- Ongoing communication regarding the current status of WNV activity
- Assistance with local mosquito control measures

WNV is a threat to human health because it can cause encephalitis. The 1999 and 2000 outbreaks in the U.S. were limited to the northeast; however, there is evidence that the virus is already in North Carolina. WNV infection in humans most often produces mild, flu-like symptoms, or no symptoms at all. While about 1 in 4 people infected with WNV might develop a mild flu-like illness, fewer than 1 in 100 become severely ill, and fewer still die from the disease, according to the Centers for Disease Control and Prevention (CDC).

The N.C. Division of Public Health is urging the medical community to promptly report suspected cases of encephalitis to local health departments. All types of arboviral encephalitis — not just WNV disease — are reportable in North Carolina. Laboratory testing for WNV and other arboviral infections (eastern equine encephalitis, western equine encephalitis, Saint Louis

encephalitis, and La Crosse virus encephalitis) is available at the State Laboratory of Public Health. To report human infections, contact the General Communicable Disease Control Branch at (919) 733-3419.

Our public health message is to encourage residents to eliminate potential mosquito breeding grounds. By throwing away or emptying anything that can hold water, such as tires, flower pot saucers and bottles, residents can reduce mosquito populations around their homes and work places. Gutters should be kept clean and in good repair. Leaky outdoor faucets should be repaired and the water in bird baths and pet bowls should be emptied at least twice a week.

Mosquito bites can be minimized by wearing long sleeves and pants with the legs tucked into socks. Use a repellent containing low concentrations of DEET (10 percent or less for children; 30 percent or less for adults), following the manufacturer's instructions. Avoid outdoor activities in the evening, when mosquitoes are most active. Use screened windows and doors and make sure screens fit tightly and are not torn.

For more information about mosquitoes and mosquito-borne disease, see the NC Public Health Pest Management section's Web site at www.deh.enr.state.nc.us/phpm/pages/index.htm. n

North Carolina Perinatal Hepatitis Prevention Program: Summary of Annual Assessments of Infants Born to Hepatitis B-Positive Mothers (1997-1999)

Prepared by Patricia T. Poole, R.N., Hepatitis B Coordinator
North Carolina Immunization Branch

According to the November 1991 recommendations of the Advisory Committee for Immunization Practices (ACIP), "…preventing hepatitis B virus (HBV) transmission during early childhood is important because of the high likelihood of chronic HBV infection and chronic liver disease that occurs when children less than five years become infected. Testing to identify pregnant women who are hepatitis B surface antigen (HBsAg) positive and providing their infants with immunoprophylaxis effectively prevents HBV transmission during the perinatal period."

BACKGROUND

Since February 1, 1990, North Carolina state law (G.S. 130A-135) has mandated that all pregnant women be tested for hepatitis B, unless known to be infected. In 1998, the North Carolina Immunization Branch conducted a birthing hospital audit to determine the percentage of pregnant women that were actually being screened. Based on the results of this survey, 92% of pregnant women in North Carolina are screened for HBsAg.

A statewide computerized database has been in place since 1998 to track pregnant women who test positive for HBsAg, their contacts, and their infants. Local health departments (LHDs) track these cases to assure that proper prophylaxis and post-vaccination serologic testing are done for the infants and to ensure that proper follow-up of contacts to the women is implemented. From the database, a semi-annual line-listing is submitted to LHDs to assist in the investigation, reporting and surveillance process.

OBJECTIVE

The objective of the North Carolina Perinatal Hepatitis B Prevention Program is to prevent perinatal transmission of hepatitis B. Prior to 1991, early prevention strategies to screen only those persons thought to be at high risk of hepatitis B virus (HBV) infection were largely ineffective because they missed a high proportion of HBV-infected mothers. Currently the ACIP recommends *universal* prenatal testing and then proper immunoprophylaxis and post-vaccination serologic testing of the infants born to infected women.

Immunoprophylaxis of these infants includes administration of hepatitis B immune globulin (HBIG) and the first hepatitis B vaccination within 12 hours of birth. The second hepatitis B vaccination should be at 1 month of age, preferably, but not later than 2 months of age. The third dose of hepatitis B vaccine hould be given at 6 months of age.

Post-vaccination serologic testing of immuno-prophylaxed infants should be done at 12-15 months of age. Testing should include both hepatitis B surface antigen (HBsAg) and antibody to HBsAg (anti-HBs) to establish success of the prophylaxis and to identify infected infants or infants that need revaccination.

METHODS

Local health departments submit Communicable Disease Report Cards, Hepatitis B Surveillance Reports and Perinatal Hepatitis B Prevention Reports to the Immunization Branch. Information from these reports is entered into the North Carolina Perinatal Hepatitis B Prevention Program Database. From this database, semi-annual line-listings and reports are generated to assist the LHDs in their investigation, reporting and surveillance process. The database also assists the state program coordinator in evaluating the effectiveness of the program. Data for this 1997-1999 summary are based on the information required by CDC for annual assessments of the Perinatal Hepatitis B Prevention Program. It is important to note that some information is missing due to children moving out of state or being lost to follow-up by LHDs.

RESULTS

Ninety-four percent of reported births to hepatitis B-positive women were tracked in 1997; 100 percent were tracked for two consecutive years, 1998 and 1999). The following percentages are based on those infants who were tracked in 1997, 1998 and 1999. (Data for 2000 will not be available until February 2002.)

The percentages of infants that received HBIG and hepatitis B vaccination on their first day of life were 100, 96 and 88 percent, respectively. The percentages of infants that received the third hepatitis B vaccination by *8 months* of age were 55, 76 and 58 percent, respectively. Only 19 percent of the infants who were known to have received all three vaccinations also received post-vaccination testing in 1997. This percentage increased in 1998 and 1999 to 48 percent. Of the infants tested after vaccination, 5 percent tested positive for HBsAg in 1997 and 1999, and 9 percent tested HBsAg positive in 1998. The 1997-1999 annual statistics for the program are shown in the table below.

	1997	**1998**	**1999**
No. of Live Births to HBsAg Positive Women	115	144	178
No. of Infants Tracked by LHD's	108	144	178
No. of Infants Who Received HBIG & Hep B Vaccination at Birth	108 (100%)	138 (96%)	157 (88%)
No. of Infants Who Received Third Hep B Vaccination by 8 Months	59 55%	109 76%	104 (58%)
No. of Infants Who Received Third Hep B Vaccination by 12 Months	105 (97%)	120 (83%)	136 (76%)
No. of Infants Who Received Post-Vaccination Testing (after completed vaccination series)	20 (19%)	58 (48%)	65 (48%)
No. of Infants Who Tested HBsAg Positive*	1 **(**5%)	5 (9%)	3* (5%)
No. of Infants Who Moved Out of State	Unknown	Unknown	10 (6%)

* Of the 178 infants born to HBsAg positive women in 1999, 65 were tested. One was positive for anti-HBc total and anti-HBs and was negative for HBsAg. This infant was not included in the number testing positive for HBsAg. These results indicate this child had been infected but developed immunity. Therefore, six percent of the tested infants born to HBsAg positive women in 1999 actually contracted hepatitis B. Of the four infants who contracted the disease in 1999, three received proper immunoprophylaxis as recommended by CDC. Of these three infants that were properly immunoprophylaxed, one cleared the HBsAg and two became probable carriers.

CONCLUSIONS

Areas of concern include the possibility that 8 percent of pregnant women may not be screened for HBsAg, the possibility that increasing percentages of children born to hepatitis B infected mothers are not properly immunoprophylaxed, and the failure to test all infants after vaccination. It is likely that there are many children born in North Carolina who are currently infected with hepatitis B and not yet identified.

According to ACIP recommendations (Nov. 22, 1991), "…infants who become infected [with HBV] by perinatal transmission have a 90% risk of chronic infection, and up to 25% will die of chronic liver disease as adults… More than 90% of these infections can be prevented if HBsAg-positive mothers are identified so that their infants can receive hepatitis B vaccine and hepatitis B immune globulin (HBIG) soon after birth… The recommended series of three intramuscular doses of

hepatitis B vaccine induces a protective antibody response in…>95% of infants…"

Studies suggest that perinatal transmission due to a highly infectious state (presence of HbeAg) or intra-uterine transmission, may occur in approximately 6 percent of properly immunized infants born to HBsAg-positive mothers. In a November 1983, *Lancet* paper ("Prevention of Perinatally Transmitted Hepatitis B Virus Infections With Hepatitis B Immune Globulin and Hepatitis B Vaccine"), Beasley et. al., found that approximately 6 percent of infants treated with the recommended HBIG-vaccine schedule became carriers.

Assuming these estimates are true, this greatly increases the importance of post-vaccination testing of **all** perinatally exposed infants. More than one in twenty of these infants may become infected even with the proper HBIG-vaccination schedule. In 1999 alone, there could have been another four children infected and not yet identified. Infected children need to be identified to assure they receive appropriate medical care as well as to prevent disease transmission. There is no known cure for hepatitis B. Prevention is the key to reduce infections in infants and to eliminate the chronic liver disease associated with chronic hepatitis B. **n**

Southern Tick-Associated Rash Illness (STARI) Study

Prepared by J. Newton MacCormack, MD, MPH
Former Branch Head
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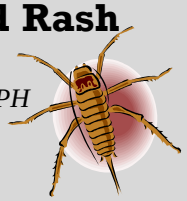
(adapted from CDC protocol)



Lyme disease is caused by infection with the tick-transmitted spirochete *Borrelia burgdorferi*. In the United States, the regions with the highest Lyme disease incidences are the Northeast, Upper Midwest, and Pacific Coast. The characteristic annular, macular, erythematous skin lesion of early Lyme disease, erythema migrans (EM), occurs at the site of the infected tick bite, has an incubation period of 3-31 days, and typically expands over time, sometimes to a diameter of 30 cm.

Tick bite-associated EM-like lesions also occur in the southern United States, including North Carolina. However, the etiology of such lesions is unknown. Some appear to be associated with bites of the Lone Star tick, *Amblyomma americanum*, the most common human-biting tick in the region. Studies to date have failed to convincingly implicate *B. burgdorferi* as the cause of the rash [ref. Campbell et al. *J Infect Dis* 1995;172:470-80; Kirkland et al. *Arch Intern Med* 1997;157:2635-41; Felz et al. *Arch Dermatol* 1999; 135: 1317-26]. Possible etiologies include a novel tick-transmitted spirochete, called *Borrelia lonestari* [ref. Barbour et al. *J Infect Dis* 1996;173:403-9; James et al. *J Infect Dis* 2001;183:1810-4], another infectious agent, or some other inflammatory process.

To determine the etiology and epidemiology of tick-associated annular skin lesions in the South, scientists at the Centers for Disease Control and Prevention (CDC) are cooperating with clinicians and scientists here to collect appropriate clinical material for research purposes. Skin specimens will be tested by PCR for *Borrelia* sequences and evaluated by microscopy; other specimens will not be tested immediately but will be stored in an appropriate fashion to allow for future testing of various etiologic hypotheses, once test methods are available. **The assistance of local health departments and clinicians in North Carolina who may see patients with EM lesions is needed in recruiting subjects for this important study.**

It is important to insure that informed patient consent is obtained, appropriate clinical specimens are obtained and appropriately handled, and that standardized and complete clinical data are collected. If this project interests you, please read carefully the following guidelines and then contact one of the CDC scientists listed below for more details about the study protocol, consent forms, and other study materials.

Patient Eligibility

The following criteria should be used to determine if a patient is eligible for enrollment:

1. A person with acute onset (within 14 days of visit to physician office) of an annular, erythematous, expanding EM-like rash that attains a size of at least 5 cm in diameter, when no alternate explanation for the rash can be found, and

2. a history of tick bite at the rash site or potential exposure to ticks within 14 days prior to rash onset.

Informed Consent for Adults and Assent Form for Minors:

A CDC investigator will send an informed consent and/or assent form for minors, as appropriate, to your office by facsimile or mail. **PRIOR to collecting specimens, please have the patient read and sign this form.** For a patient under 18 years of age, please have a parent or guardian complete and sign an

Informed Consent form and have an *Assent Form for Minors* completed and signed by the minor patient. **It is extremely important that your office return the signed and witnessed form with the clinical specimens. CDC cannot accept specimens and enroll patients in the study without a signed informed consent and/or assent form for minors.**

Laboratory Submission Form for Data Collection:

Please carefully complete the *Laboratory Submission Form for Southern Tick-Associated Rash Illness (STARI) Specimens*, including the space for a simple diagram of the skin lesion. Please do **not** include the patient's name on the form. [Note: Clinical information that is legible and as complete as possible must accompany all specimens.] If possible, a color photograph of the skin lesion should be obtained, properly labeled, and attached to the Laboratory Submission form.

If you wish to request standard serologic tests for Lyme disease, please also submit a CDC DASH form with the patient's name.

Clinical Specimen Collection and Handling:

Ideally, the following samples should be collected. A specimen collection kit and detailed protocol can be sent to your office prior to the beginning of tick season, or by overnight delivery service at the time a patient presents for care.

- 1, or preferably 2, skin biopsies
- clotted blood for serum (acute-phase specimen now, convalescent-phase specimen 3-6 weeks later)
- anticoagulated whole blood
- urine

If a patient does not consent to a skin biopsy, it is still important to collect and submit the blood and urine specimens (and the clinical data).

CDC will cover the cost of shipping specimens to Ft. Collins.

CDC scientist-contacts:

Dr. Ned Hayes (Epidemiology Section)
Tel: (970) 221-6474
Email: ebh2@cdc.gov

Dr. Barbara Johnson
(Molecular Bacteriology Section)
Tel: (970) 221-6463
Email: bjj1@cdc.gov

Dr. David Dennis
(Bacterial Zoonoses Branch)
Tel: (970)-221-6418
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Dr. Martin Schriefer
(Diagnostic and Reference Section)
Tel (970) 221-6479
Email: Mschriefer@cdc.gov

Bacterial Zoonoses Branch
Division of Vector-Borne Infectious Diseases
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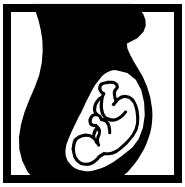
P.O. Box 2087
Fort Collins, CO 80522-2087

North Carolina Chosen to Participate in Learning Lab to Prevent HIV Perinatal Transmission

Prepared by Judy Owen-O'Dowd
Special Projects Coordinator
HIV/STD Prevention & Care Branch



The Association of Maternal and Child Health Programs (AMCHP) recently awarded North Carolina the opportunity to participate with four other states in a two-part Action Learning Lab (ALL). ALL is bringing together cross-program teams of state health officials and other key players involved in the prevention of HIV transmission from pregnant women to their infants. AMCHP is collaborating with The American College of Obstetricians and Gynecologists (ACOG), the Health Resources and Services Administration (HRSA) Maternal and Child Health Bureau, CityMatCH, and the National Association of State and Territorial AIDS Directors (NASTAD).

In early 2000, the Women's Health Branch - N.C. Women's and Children's Health Section and the HIV/STD Prevention and Care Branch - Epidemiology Section of the Division of Public Health, the North Carolina Section of ACOG, and other public- and private-sector representatives formed the "Providers' Partnership Project" to focus on perinatal HIV infection. Members of the Providers' Partnership Project, along with the North

(continued on page 8)

North Carolina HIV/STD Non-Traditional Counseling, Testing and Referral Sites (NTS)

Prepared by Marti Eisenberg Nicolaysen
NTS Coordinator HIV/STD Prevention & Care Branch

The North Carolina Non-Traditional Counseling, Testing and Referral Sites program, or NTS, was created to address barriers to HIV/STD testing through collaboration with community-based organizations and through the integration of expanded HIV/STD services outside of the traditional public health setting. This successful collaboration provides visible alternative HIV/STD services in easily accessible community settings during non-traditional hours. Non-traditional test sites operate as either stand-alone sites in appropriate settings such as public housing centers, homeless shelters, colleges and nightclubs, or are physically located in a local health department but have hours of operation (evenings, nights and weekends) other than the normal working hours. Services may include HIV and syphilis counseling and testing, STD examinations, and referrals to appropriate prevention and treatment services.

The strategic goals for HIV/STD prevention that are supported by the establishment of non-traditional testing sites are: to develop new initiatives to better monitor the HIV and syphilis epidemics by increasing knowledge of HIV and syphilis serostatus; to improve referral services to appropriate prevention and treatment resources; to increase HIV/STD education levels among high-risk individuals; and to aid high-risk individuals in risk-reduction efforts.

The HIV/STD Prevention and Care Branch currently funds nine NTS projects (see map for project areas). These projects have provided a mechanism for hard-to-reach/high-risk individuals to obtain HIV/STD services outside the traditional public health setting. As a result, HIV and syphilis testing in the NTS program continues to identify a greater proportion of positives than testing

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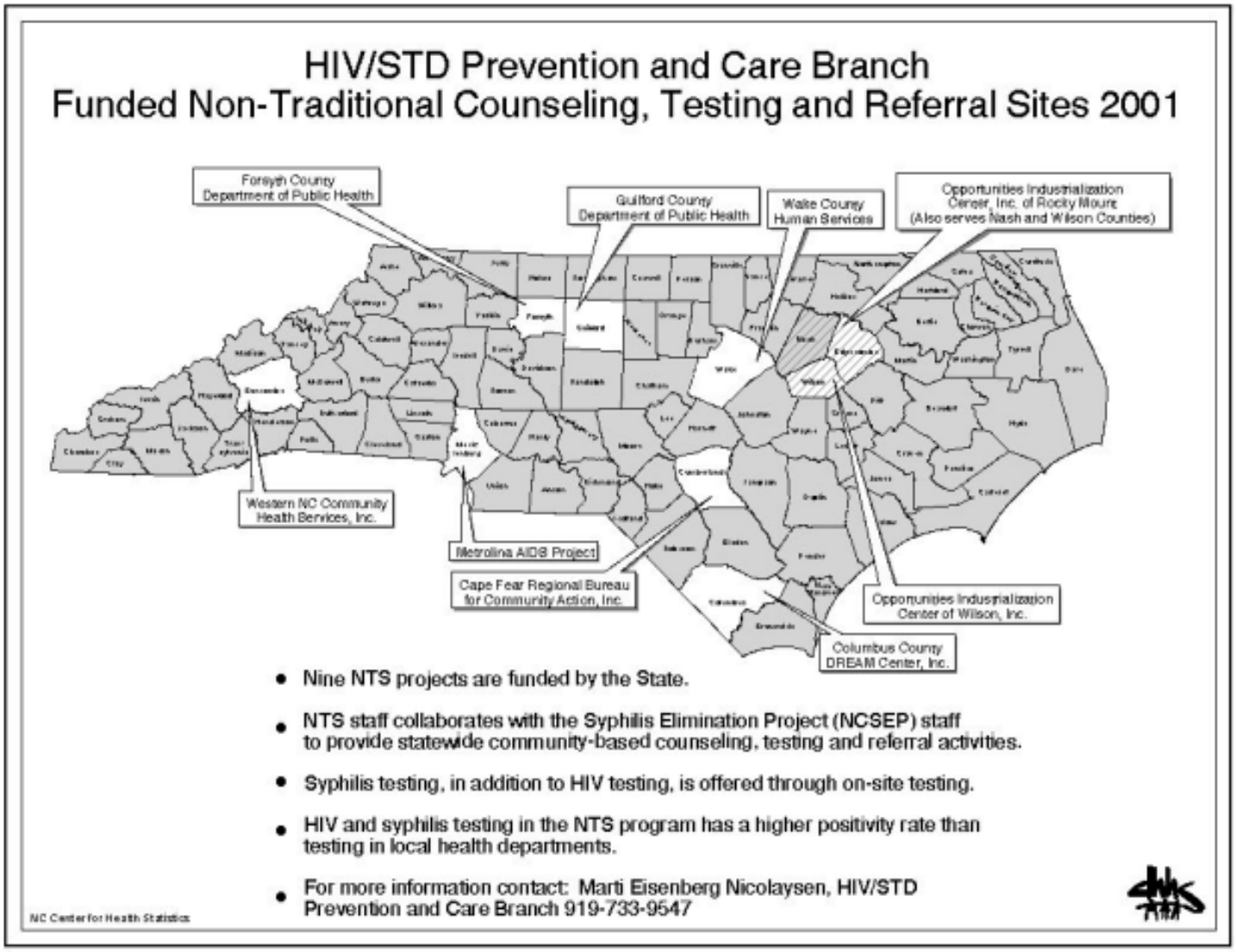

Learning Lab to Prevent HIV Perinatal Transmission

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Carolina AIDS Advisory Council, all concurred that North Carolina should strengthen the existing administrative HIV Counseling and Testing rule for pregnant women to increase the likelihood that all pregnant women will receive appropriate counseling and testing for HIV.

The North Carolina Commission for Health Services passed a revision of 15A NCAC 19A.0202(14), the rule on HIV testing for pregnant women. The following language became effective on June 1, 2001 as a temporary rule and is proposed as a permanent rule change:

> (14) Every pregnant woman shall be given HIV pre-test counseling, as described in 15A NCAC 19A .0202(10), by her attending physician as early in the pregnancy as possible. At the time this counseling is provided, and after informed consent is obtained, the attending physician shall test the pregnant woman for HIV infection, unless the pregnant woman refuses the HIV test.

North Carolina is participating in the Action Learning Lab. Members of the Women's Health Branch , the HIV/STD Prevention and Care Branch, and several community partners attended the first 'Traveling Team' ALL session in Washington, D.C.. July 25 and 26. These 'Traveling Team' members will continue to work with the Providers' Partnership Project to implement strategies developed to reduce the incidence of perinatal HIV in North Carolina.

North Carolina was selected by AMCHP and ACOG to be a national model for other states in using this collaborative approach to implementing evidenced-based guidelines. A North Carolina team recently traveled to Washington to demonstrate our successes and to learn from other model states. Back here at home, collaborative work implementing these HIV guidelines and the new State prenatal HIV testing rule will continue.

If you have questions about North Carolina's participation in the HIV Perinatal Action Learning Labs or the temporary rule change, contact Judy Owen-O'Dowd, 919-733-9553 or judy.owen.odowd@ncmail.net. **n**

Policy for HIV Counseling and Testing and the Use of Orasure®

Prepared by Judy Owen-O'Dowd
Special Projects Coordinator
HIV/STD Prevention & Care Branch

Testing for HIV is a very powerful prevention tool if combined with appropriate and confidential counseling and referral. Unlike many of our other prevention activities, HIV testing is regulated by North Carolina law (GS 130A-148 and 15A NCAC 19A .0101 - .0202). The staff of the HIV/STD Prevention and Care Branch receives numerous questions regarding HIV counseling and testing provided through outreach and also on the use of OraSure®. As a result of these questions, a policy was developed to insure that agencies are adhering to North Carolina laws and rules when they perform HIV counseling and testing, that services are appropriately targeted, and that the main agencies charged with HIV prevention activities are working together to provide unduplicated and coordinated services. This policy applies to all agencies that receive funds from the Branch, whether the HIV tests performed are serum tests, oral fluid tests, or other tests approved in the future, and regardless of what agency is paying for the test and its processing.

The use of OraSure® (an oral fluid collection device) for HIV testing is becoming more widespread in North Carolina. Although OraSure® does not use blood to determine an individual's antibody status, it is regulated by the North Carolina General Statutes and Administrative Code as an approved test for HIV.

The HIV Counseling and Testing policy outlines the role of the physician, the community-based organization and the local health department. None of the policy requirements are new; the Branch combined the applicable General Statutes, the Administrative code and funding requirements into one document.

Critical Elements of the Policy:

- Only a physician can order an HIV test, including OraSure®.
- The individual to be tested must receive appropriate pre- and post-test counseling.
- All HIV positive results are to be reported to the local health department within the listed timeframes.
- If a community-based organization (CBO) wants to provide HIV outreach counseling and testing, a

Memorandum of Agreement should be developed between the agency and the local health department in the county where the activities are to occur.

- When an agency requests funding from the Branch, the agency is required to submit a letter of support from the health department in each of the counties served; the active collaboration with the local health department should continue throughout the year.
- It is imperative that communication and coordination between the local health department and local community agencies begin well in advance of any proposed activities.

If you would like a copy of the Branch's HIV Counseling and Testing Policy, have questions or need assistance regarding the policy, contact Judy Owen-O'Dowd at 919-733-9553 or judy.owen.odowd@ncmail.net. n

North Carolina Investigation Highlighted in Morbidity and Mortality Weekly Report

Prepared by Lisa Abatemarco, Assistant Section Chief
Epidemiology Section

The July 6, 2001 issue of Morbidity and Mortality Weekly Report (MMWR) includes an article entitled "Outbreak of Listeriosis Associated with Homemade Mexican-style Cheese" written by Dr. Pia MacDonald, an EIS Officer from the Centers for Disease Control (CDC), assigned to the General Communicable Disease Control Branch.

The article outlines a case here in North Carolina that started with a phone call on November 13, 2000 from area local health providers in the Winston-Salem area to the local health department about three cases of listeriosis within a 2 week period in recent Mexican immigrants. The North Carolina General Communicable Disease Branch, along with the Forsyth County Health Department, the Department of Environment and Natural Resources, the Food and Drug Administration and CDC collaborated on the investigation.

The results of this investigation concluded that patients were more likely to have been diagnosed with L. monocytogenes after eating cheese purchased from door-to-door vendors. "Queso Fresco" a Mexican-style fresh soft cheese was found to be the source.

For additional information and to read Dr. MacDonald's article, you can go to http://www.cdc.gov/mmwr and find Volume 50/Number 26. n

Geographic Information Systems in North Carolina's Public Health

Prepared by Jim Wilson, Geographic Analyst
State Center for Health Statistics

Maps have been a part of epidemiological research and public health ever since John Snow's legendary plotting of London cholera deaths and the Broad Street pump 150 years ago. The power of a map lies not just in the spatial description of one phenomenon (e.g., cholera deaths), but in its ability to show relationships and associations among a range of seemingly unrelated phenomena. For example, maps can show relationships between cholera cases and water supply; drug injectors, HIV cases, and vacant housing; socio-economic factors and immunization levels; or private wells and potential sources of contamination. The Geographic Analysis Unit (GAU) located at the State Center for Health Statistics (SCHS) is engaged in several projects that exemplify the potential of Geographic Information Systems (GIS) in North Carolina's public health programs. These projects include the ongoing analyses of cancer clusters, the mapping and surveillance of STDs, and community health assessment.

Recently, the GAU received a request via the Central Cancer Registry to plot addresses of brain tumor cases at pre-specified distances from an asphalt processing plant. These distances were calculated and classified into distance interval groups and stored for later comparisons to unrelated tumor cases and odor complaints, used as controls, in order to determine if there was any unique pattern of clustering around the asphalt processing plant. The results are not yet definitive, since work remains for what constitutes a true cancer cluster.

A dynamic application of GIS technology is the mapping and surveillance of public health events. The GAU has been working closely with the HIV/STD Prevention and Care Branch in tracking the spread of syphilis cases within counties on a quarterly basis. Hard copy and website county rate maps are also being produced that depict the waxing and waning of selected STDs over time. This type of mapping is useful for determining hot spots of public health events and where prevention and care efforts should be focused.

The Community Health Assessment Initiative is another

programmatic area where GIS and maps play an important role. The use of maps to integrate a community's demographic, mortality, and morbidity data with health resources and assets data facilitates comparisons with other geographic regions and assists in setting priorities. The community health assessment process involves a wide range of people who understand data and statistics at different levels. Maps help provide a common language for understanding a community's health priorities and potential solutions for identified problems.

GIS plays an important role in the diverse mix of programs found in North Carolina's Division of Public Health. The GAU has also been expanding the role of GIS onto the Internet by developing an online *Health Atlas*. Additionally, there are several downloadable maps that show the spread of rabies, the impact of floodwaters on selected populations, and disparities in health. The atlas and other maps can be found at the State Center's website, **http://www.schs.state.nc.us/SCHS.** n

HIV/STD Non-Traditional Counseling, Testing and Referral Sites

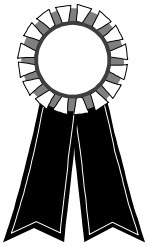
(*continued from page 7)*

in other publicly funded sites. In CY-2000, the NTS program tested 4,617 individuals for HIV, of which 52 (1.1 percent) were seropositive (208 were OraSure tests). Of the 3,723 individuals who were tested for syphilis, 72 (1.9 percent) were seropositive. In CY-1999, the HIV positivity rate was 1.2 percent and the syphilis positivity rate was 1.3 percent. At other publicly-funded, non-NTS sites,100,474 individuals were tested for HIV; 682 (less than 1 percent) were seropositive.

For FY 2001-2002, $85,000 in supplemental funding will be allotted to fund one or two new projects. Priority will be given to programs in the southern region of the state where there are high HIV and syphilis morbidity rates, and/or to programs targeting minority adolescents. Also, $15,000 will be used to enhance and expand the services of currently funded projects. The North Carolina HIV/STD Prevention and Care Branch is committed to the expansion and accessibility of quality HIV/STD prevention and intervention services to underserved communities and offers continuation funding to enhance this initiative. n

Employee Recognition: Pat Collins, Employee of the Quarter

Prepared by John Peebles



Ms. Pat Collins has been named Employee of the Quarter for the Epidemiology Section for the first quarter of calendar year 2001. She was nominated for this recognition based upon her commitment to and demonstration of **service excellence**.

Ms. Collins, a twenty-three-year veterean of state government, is the Contract Compliance Monitor and Coordinator in the finance unit of the HIV/STD Prevention and Care Branch. She is responsible for ensuring the timely initiation, processing and execution of over 239 contracts for $12 million.

Since assuming her current duties in April 1999, Ms. Collins has established a procedural system related to all aspects of contract management that is unsurpassed in the Division of Public Health. In order to facilitate the tracking and budgeting of contracts, she has developed, implemented, and continually refined a contract spreadsheet listing all current and pending contracts and all associated information. This tool has literally revolutionized the Branch's ability to effectively manage the contract process and, consequently, to ensure that HIV Prevention and Care clients in North Carolina continue to receive timely support.

Ms. Collins' dedication to excellence and genuine concern for our citizens is widely recognized and is demonstrated on a daily basis. She will receive a certificate of recognition for her service excellence and a gift certificate from the management of the section. n

Reported Communicable Diseases, North Carolina, January-June 2001 (by date of report)*

Disease	Year-to-Date (1st-2nd Quarter)			2nd Quarter	
	2001	2000	Mean (96-00)	2001	Comments / Note
Campylobacter	**197**	228	232	127	
Chlamydia, laboratory reports					
Cryptosporidiosis	**15**	11	-	4	Note 1 & 2
E. coli O157:H7	**25**	17	15	11	Note 3
Foodborne, other	**4**	3	24	1	
Gonorrhea					
Hemophilus influenzae	**29**	15	17	11	
Hepatitis A	**64**	90	76	34	
Hepatitis B, acute	**109**	137	133	58	
Hepatitis B, chronic	**300**	320	354	190	
Hepatitis C, acute	**9**	13	-	3	Note 1 & 4
HIV/AIDS					Note 5
Legionellosis	**5**	8	7	3	
Lyme disease	**7**	9	18	5	
Malaria	**2**	11	10	1	
Meningococcal disease	**50**	29	41	14	
Meningitis, pneumococcal	**33**	30	34	11	
Mumps	**1**	3	7	1	
Rabies, animal	**296**	293	332	162	
Rocky Mountain Spotted Fever	**24**	20	31	18	
Salmonellosis	**461**	356	475	228	
Shigellosis	**190**	60	125	92	
Strepto. A, invasive	**90**	58	-	55	Note 2
Syphilis, total					Note 6
Tetanus	**1**	0	0	0	
Toxic Shock Syndrome	**3**	0	0	1	
Tuberculosis					
Tularemia	**1**	2	1	0	
Typhoid Fever	**1**	0	1	0	
Vibrio vulnificus	**1**	1	-	0	Note 7
Vibrio, other	**4**	2	-	2	Note 2
Vanco. Resistant Enterococci	**332**	194	-	179	Note 2
Whooping cough	**40**	49	47	17	

* Preliminary data as of 7/20/2001. Quarters are defined as 13-week periods.

Notes: 1. - =Not reportable in this entire time period; 2. Became reportable 8/1/98; 3. Became reportable 10/1/94; 4. Became reportable as such 8/1/98; previously within other category ("Encephalitis"; and "Hepatitis, non A-non B"); 5. Earliest report with HIV infection or AIDS diagnosis; 6. Primary, secondary and early latent syphilis; 7. Became reportable 7/1/97.

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